Advanced Applied Econometrics

Fall 2019

Instructor: Chris Auld
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250.721.8537
BEC 348

Office hours: Wednesdays 2:30–3:30, or by appointment.

Course page: See Coursespaces.

When and where:

Prerequisites:
Economics 203 and either 345 or 365.

Course Overview.

The course provides an introduction to the practice of applied econometrics, focusing on specifying, estimating, interpreting, and reporting estimates from econometric models, particularly in contexts in which the goal is to learn about causal effects. After completing this course, students should be capable and critical consumers and producers of workhorse econometric models, including linear regression, instrumental variables, difference-in-difference, and regression discontinuity models. Problem sets and lectures emphasize applications of these methods to real data, including practical issues such as preparing tables and graphs, and the course draws heavily on applied examples in the literature. The statistical software Stata will be used extensively.

Prerequisites.

The formal prerequisites are intermediate microeconomics (Econ 203 or equivalent) and at least one semester of econometrics, either Economics 345 or 365. You are expected to be comfortable with basic statistics and linear algebra. If you lack these prerequisites but consider yourself nonetheless prepared for the course, please talk to me.
**TOPICS.**

1. Introduction to econometrics and causality.
2. OLS: properties, specification, and interpretation.
3. The logic, and the pitfalls, of frequentist inference.
4. Instrumental variables.
5. Differences in differences.
6. Regression discontinuity.

All topics will be addressed using a combination of blackboard theory, applied examples from the literature, and hands-on computing exercises using Stata. Since this is an applied course, we will also explicitly consider, along the way, a number of issues which are often not discussed in core theory courses, such as:

- How to specify regression models to measure what we would like to measure, including how to use and interpret dummy variables, interaction terms, and stratification.
- How to interpret regression estimates and related statistics in published papers.
- How to spot and avoid common misunderstandings and errors in statistical research.
- How to clearly present and discuss estimates of econometric models.
- How to create good graphs and tables to present your findings, and how to get your output from Stata into Word or \LaTeX.

**LABS.**

A weekly lab has been set, but we will not meet for labs on a weekly basis. Instead, lab time will be used at my discretion to reinforce selected topics, provide practice sessions as necessary, or to make up for any lectures I may miss due to travel or to illness.
Computing.

The required software for the course is Stata. The University has a site license which makes Stata available in the Social Science computing labs. You may also wish to purchase a copy, particularly if you intend to go on to graduate school. The current version is Stata 16 but for this course you should have no issues with any version 11 or greater. We will discuss in class the different versions of Stata and which one might be best for you to purchase should you choose to do so.

You are encouraged to bring a laptop to class. You may then follow along with statistical demonstrations and have access to applied papers we study as examples.

Materials.

There is no single textbook used for this course, rather, sources include a variety of textbooks and journal articles. A free textbook by Scott Cunningham at Baylor University is highly recommended, and contains lucid discussion of most of the topics we will discuss:

  http://scunning.com/cunningham_mixtape.pdf

Slides and other current course material will be made available on CourseSpaces. You should read these materials carefully, but not use them exclusively. Other recommended books include:

  MHE is a lively, and not very technical, discussion of the major “designs” used in current applied econometrics. It is not a substitute for an econometrics textbook, but is an excellent supplement to an econometrics textbook. Similarly, *Mastering ’Metrics: The path from cause to effect* covers much of the same material at an even lower technical level and is also recommended.

- Cameron, C. and P. Trivedi (2010), *Microeconometrics Using Stata.*
  Acts as a reasonable substitute in many cases for the Stata documentation, and contains good discussion of many popular econometric methods alongside code implementing them.

  You should have a good advanced undergraduate level econometrics textbook as a reference. It need not be Wooldridge, but Wooldridge is a recommended choice.
ASSIGNMENTS.

 Approximately four quite lengthy problem sets will be given. They will, variously, involve:

- solving theoretical problems.
- finding, downloading, and cleaning data to generate an estimation sample.
- generating tables and graphs showing descriptive statistics and estimation results.
- specifying and estimating models and calculating and interpreting various test statistics.
- critical assessment of published empirical research.

Other assignments, including class presentations, may be set.

Penalties will be assessed if you do not hand an assignment in on time and do not contact me prior to the due date, so if you cannot avoid handing an assignment in late, please contact me.

All assignments must be completed to receive a passing grade in the course.

EXAMS.

There will be an in-class midterm scheduled during the first week of classes and a final exam which may be in-class or take-home at my discretion. A passing grade on the final exam must be achieved in order to receive a passing grade in the course.

EVALUATION.

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<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Assignments</td>
<td>40%</td>
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<tr>
<td>Midterm exam</td>
<td>20%</td>
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<tr>
<td>Final exam</td>
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ATTENDANCE.

Attendance will not be taken, but is expected. You are responsible for all material covered in lectures whether or not you attend any given lecture. Lecture slides posted online do not contain all of the material discussed in class and are not an adequate substitute for attending lectures.
**Contacting the Instructor.**

Questions regarding class material should usually be posed during class or in person during office hours. It is not usually feasible to provide lengthy explanations of class material over email. Should you send email for whatever reason, please put “Econ 465” in the subject line. If I do not respond within 48 hours, please resend.

**Travel Plans.**

Students are advised not to make work or travel plans until after the examination timetable has been finalized. Students who wish to finalize their travel plans at an earlier date should book flights that depart after the end of the examination period. There will be no special accommodation if travel plans conflict with the examination.

**Policy on Inclusivity and Diversity.**

The University of Victoria is committed to providing an environment that affirms and promotes the dignity of human beings of diverse backgrounds and needs.

**Other Policies.**

All University of Victoria and Department of Economics policies apply, including but not limited to:

- [http://library.uvic.ca/site/lib/instruction/cite/plagiarism.html](http://library.uvic.ca/site/lib/instruction/cite/plagiarism.html)